

EMERGING FIRE CODE ISSUES ROUNDTABLE REPORT

Nashville, TN & Bellevue, WA



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Background

In May, 2004, the International Association of Fire Chiefs (IAFC) convened two Emerging Codes Issues Roundtables. Fifty fire service participants selected as representatives from a diverse group of interests in the code industry were brought together in forums of twenty-five each. The roundtable meetings were held in Bellevue, Washington, on May 6-7, and in Nashville, Tennessee, on May 27-28.

The purpose of the conferences was to develop strategies for enacting building code changes with an emphasis on life safety and fire threat reduction in nightclubs, regardless of location or age, and in other places of public assembly. The deliverables realized from the meetings include the development of strategies that will be disseminated. These strategies may be used to launch a nationwide campaign to enact sweeping fire and life safety code changes targeting occupancies that have recently captured the nation's attention. The deliverables will aim to help create a model uniform fire and life safety code to prevent further tragedies like the nightclub fire in West Warwick, Rhode Island (2003), and the panic exit from the dance club in Chicago, Illinois (2003).

Both of these recent events contained a number of similarities to tragic public assembly fires that have occurred over the last 65 years (e.g., Natchez Dance Hall, Coconut Grove Night Club, Ringling Brothers Circus Tent, Beverly Hills Supper Club, and Happyland Night Club). The proof of the success of this proposed strategy can be found in the fact that a fire with almost identical

circumstances occurred in a crowded Minneapolis nightclub two nights before the West Warwick event. No one was injured, and no lives were lost in Minneapolis because of local codes that required automatic fire sprinklers, fireproof wall coverings and decorations, adequately maintained exits, and enforced occupancy limits.

Process

The two 25-member roundtable forums were comprised of subject matter experts from the fire service community. Individual participants were identified and approved by the IAFC based upon professional credentials and fire code related

experience. Each confirmed attendee was provided with relevant background materials in advance of the professionally facilitated two-day meetings.

The roundtable forums were distinctly defined by the experience and expertise of the

participants. The first group was comprised primarily of fire officers and chiefs skilled in fire ground operations, while the second group was composed predominately of fire marshals and career professionals directly involved in the fire prevention and code enforcement process.

Each roundtable consisted of an introductory general session which identified the types of public assembly occupancies within the scope of the forum's purpose. General issues and concerns identified prior to the forum were reviewed and case studies were presented and discussed. A previously unavailable video presentation of the West Warwick fire was shown to familiarize the participants with the specifics of the fatal incident.



A subsequent presentation of the Minneapolis nightclub fire was provided to enable participants to make comparisons between the two events and draw conclusions as to the factors that contributed to the successes and failures of each.

The predominately fire chief group maintained an operational focus throughout their discussions. After reviewing the case studies, the group shifted its emphasis from response and control, toward strategies focused more strongly on prevention and mitigation.

The predominately fire marshal group began and maintained a strong emphasis on prevention and mitigation. There was little focus in this group on response and control issues or concerns.

After viewing the video presentation and evaluating the case studies, conference participants were divided by the moderator, Jack Snook of Emergency Services Consulting, Inc., into three sub-groups to target their efforts and focus deliberative discussion. Each break-out group consisted of participants selected for their interest and expertise relative to the topic. The number of participants in each group was numerically balanced to maximize time and human resource involvement.

The forum focused on the following types of occupancies:

- Nightclubs and Restaurants
- Places of Worship and School Auditoriums
- Arenas, Stadiums, and Theaters

Each group identified issues within their area of assigned concentration. Once this effort was complete, the participants were brought back together to discuss each issue in general session. At that point, they eliminated redundancy and ensured all major issues were assigned. Input was received and integrated into the forum documentation. The break-out groups then continued to work to address the identified issues by developing specific initiatives and strategies.

What follows is the result of debate and discussion among and between professionals whose agencies, organizations, and personnel directly impact the emergency, pre-planning, and response efforts pertaining to public assembly occupancies.

Current Environment

Over the years numerous public assembly occupancies have been the scene of catastrophic fires involving large loss of life. Noteworthy examples include the following:

- Iroquois Theater, Chicago, IL, December 30, 1903, 602 killed
- Cocoanut Grove nightclub, Boston, MA, November 28, 1942, 492 killed
- Conway's Theater, Brooklyn, NY, December 5, 1876, 285 killed
- Rhythm Club dance hall, Natchez, MS, April 23, 1940, 207 killed
- Rhodes Opera House, Boyertown, PA, January 12, 1908, 170 killed
- Ringling Brothers and Barnum & Bailey circus tent, Hartford, CT, July 6, 1944, 168 killed
- Beverly Hills Supper Club, Southgate, KY, May 28, 1977, 165 killed
- Richmond Theater, Richmond, VA, December 26, 1811, 160 killed (including the governor and a former U.S. senator from the state)
- The Station nightclub, West Warwick, RI, February 20, 2003, 100 killed
- Happy Land social club, Bronx, NY, March 25, 1990, 87 killed

Upon review of the case studies, the groups outlined the following factors that could create a potential for another significant event, such as those listed above.

- Faulty electrical wiring
- Indoor pyrotechnic display
- Ineffective crowd control measures
- Blocked exits /exit capacity
- Lack of public understanding of exit use
- Highly flammable interior finishes
- Flammable decorative material
- Serial homicide

- Terrorist threat/attack
- Lack of staff training/knowledge
- Lack of comprehensive inspection services

The fire service has been concerned for years about factors that influence the spread of fire within structures and loss of life as a result. Specific concerns identified by the participants included the following:

- Inadequate exit capacity
- Locked or obstructed exits
- Built-in fire suppression systems
- Combustibility of furnishings and contents
- Undiscovered ignition sources
- Occupancies that do not conform to current fire and life safety codes
- Proliferation of clubs that avoid fire and life safety regulation
- Occupant impairment due to alcohol and/or drugs
- Poor exit lighting
- Low illumination of interior spaces during emergency evacuation
- Pyrotechnic displays inside structures
- Occupancy loads in excess of capacity
- Unrealistic occupant load formulas in building codes
- Inappropriate actions by people faced with an emergency
- Architects' lack of emphasis on fire safe design
- Lack of emergency planning by facility operators and insufficient emergency response training provided to facility staff
- Insufficiently staffed fire department fire prevention functions and/or inadequately trained fire inspection personnel

The groups asserted that the establishment of a strong fire code is the obvious solution to overcome these factors. However, it was concluded that there is currently a large disparity in the sophistication and application of fire and building codes from jurisdiction to jurisdiction. Even in those jurisdictions that have adopted a comprehensive set of fire and building codes, lack

of adequate enforcement often renders them ineffective.

Findings

The forum worked to identify key issues that impact life safety in public assembly occupancies. The sub-groups addressed the issues further by formulating problem statements to summarize specific life safety concerns. Discussion centered on developing initiatives designed to target the issues recognized by the groups. As strategies were formulated, the participants strongly recommended that each be phrased as a directive and designated to a specific organization for implementation. Participants recommended that the majority of the strategies outlined in the following section be assigned to the IAFC Fire and Life Safety Section for implementation.

The following focus issues were identified and discussed:

- I. Festival Seating
- II. Crowd Management
- III. Political Intervention
- IV. Emergency Planning
- V. Human Behavior Factors
- VI. Pyrotechnics and Special Effects
- VII. Enforcement and Oversight
- VIII. Multiple Use
- IX. Pre-event Notifications
- X. Staff Training
- XI. Prevention and Education
- XII. Terrorism and Arson
- XIII. Interior Finishes and Decorations
- XIV. Suppression Systems
- XV. Occupancy Environment
- XVI. Exiting /Egress
- XVII. Code Initiatives

Issue I - Festival Seating

Problem Statement

Festival seating often creates an exiting hazard as a result of concentrating occupants in limited areas and allowing "choke points" in the exiting system. As a result, exiting in emergency conditions is

impeded and potentially ineffective when it is needed most.

Initiative

Alternatives to festival seating arrangements should be developed and amended into existing fire and building codes to improve the level of safety for occupants when festival seating plans are used.

Strategies

The adoption of fire and building code amendments should be actively encouraged and pursued in order to accomplish the following:

- Require alternative floor plans and exiting plans that reduce the concentration of occupants in any one area
- Require alternative exiting plans that eliminate “choke points”
- Amend occupant load formulas to reduce occupant load where festival seating is to be used

Create an educational offering outlining constructive recommendations for building owners/operators contemplating festival seating. This offering should be distributed to all jurisdictions as a model “best practice guide” and its use actively encouraged and promoted at the local level.

Issue II - Crowd Management

Problem Statement

Ineffective crowd management by venue staff during emergencies can contribute to crowd panic causing unsuccessful and/or inappropriate exiting actions on the part of audience members. The potential for significant loss of life in these venues is increased when effective crowd control plans are not implemented and followed.

Initiative

Venue operators should be assisted by local and/or state fire officials in developing effective crowd management plans. Assistance should also be

provided in training venue staff on those plans and making sure they know how to implement them.

Strategies

Model crowd management protocols and venue staff training programs that will lead to effective crowd management during emergencies should be developed. These protocols should include the following:

- A required action plan for each venue that includes the crowd manager and event staff responsibilities
- Pre-event safety announcements
- Compensating for audience impairment resulting from alcohol, etc.
- An exit strategy that ensures that panic does not occur during an emergency
- A train-the-trainer program for facility risk management personnel
- Inspections by qualified fire service inspectors during times of peak occupancy

Issue III - Political Intervention

Problem Statement

Political intervention by uninformed politicians, often resulting from special interest pressure, impedes the development and/or enforcement of fire and life safety regulations. There is a need to encourage an informed and educated assembly of political leaders to champion life safety perspectives in the legislative and political arena.

Initiative

The United States Fire Administration (USFA) should take the lead in working with other key associations such as the International City/County Management Association, the National League of Cities, and others, to develop partnerships that will inform politicians on the need for effective fire prevention and mitigation.

Strategies

Efforts must be made to

- Identify and educate the following stakeholders:

Local/state/federal elected officials
Regulatory agencies
Fire service
Building officials
Development community
Architects
Chambers of commerce
Industry
Public service organizations
Clergy

- Create an awareness of the issues among elected officials
- Utilize state and national caucuses for advancing political issues

The groups asserted that it is time to develop a system of documenting success stories (i.e., emergencies in public assembly occupancies that did NOT result in loss of life) as an educational tool to be used to convince politicians and emergency responders of the need for effective prevention and mitigation efforts. The groups believed that a model fire and building code language that will require documentation of any variation of the code, regardless of the genesis of the variance.

Issue IV - Emergency Planning

Problem Statement

The absence of fire and life safety action plans in place for public assembly occupancies to follow during an emergency event contributes to the ineffectiveness of facility staff to mitigate nonlinear behavior and ensuing chaos that predicates an incident involving significant loss of life.

Initiative

A master plan to address the absence of such plans in these occupancies should be constructed. Such a master plan should be in the form of a “best practice” document that will be widely distributed to and adopted by state and local jurisdictions.

Strategies

A model master plan should perform the following:

- Identify stakeholders
- Identify specific problems to be resolved
- Establish workgroups to develop specific code change recommendations in the appropriate format for submission to the model code organizations

The groups believe that it is incumbent upon the IAFC to demonstrate leadership in initiating this process and then mobilizing the fire service to assure adoption of the proposed code changes.

Issue V - Human Behavior Factors

Problem Statement

Complex and erratic human behavioral factors impact the ability of the public to internalize situational cues during an emergency event and respond appropriately. These peripheral dynamics may not be adequately addressed in current codes and standards.

Initiative

The IAFC should partner with the U.S. Fire Administration (USFA), the Centers for Disease Control (CDC), and other organizations to further investigate individual and collective behavior in fire and other emergency situations. The groups noted that special conditions, such as noise, darkness, physical impairment due to alcohol and drugs, and volatile entertainment may affect human judgment and cognitive ability.

Strategies

The participants recommended a study focused on analyzing human behavioral responses in assembly situations and developing effective strategies designed to mitigate the potential for catastrophic circumstances that may result from inappropriate crowd reaction.

The results of such a study should be used by the IAFC to develop appropriate fire and building code amendments that facilitate appropriate human

behavioral responses during an emergency event. These amendments should be submitted and actively promoted by the IAFC for adoption into both model code sets. These amendments should target, at a minimum the following:

- Employing available technologies to enhance human behavior in fire emergencies
- Improved egress marking systems
- State of the art voice and visual evacuation systems
- Egress system requirements that match human actions

Issue VI - Pyrotechnics & Special Effects

Problem Statement

The use of pyrotechnic and other open flame devices in public assembly facilities present a unique and serious risk. Such devices should only be used in controlled environments by properly trained and qualified technicians.

Initiative

Ensure that the use of pyrotechnic and open flame devices complies with nationally recognized standards and codes.

Strategies

The forum participants acknowledged that standards and codes exist that, if followed, will provide a reasonable degree of fire safety. User education and local enforcement of permit and license requirements should be accomplished for pyrotechnic devices and other open flame producing materials to compel that safe incineration and exposure practices are adhered to.

- Require licensed pyrotechnic technicians for indoor pyrotechnic displays and allow such displays only in public assembly occupancies that are designed for such performances
- Require licensed flame effect technicians for use of flame effects and allow such displays only in public assembly occupancies that are designed for such performances

Issue VII - Enforcement & Oversight

Problem Statements

Fire inspection personnel often lack the necessary training to conduct thorough and effective occupancy inspections. In many departments, response company personnel are expected to conduct fire inspections without receiving sufficient occupational training.

Typically, the lack of regularly assigned fire prevention inspectors necessitates recruitment of fire response personnel to perform those duties. Understaffing fire prevention functions results in decreased frequency and comprehensiveness of inspections, which the groups agreed is a fundamental component of ensuring occupant safety through education and code enforcement.

Initiative

Work to ensure that the fire prevention function is staffed as needed to provide quality fire prevention services. Develop and/or enhance training programs and certification systems to ensure that personnel conducting fire inspections are qualified in the performance of those duties.

Strategies

Forum participants identified the need to increase staff resources available to the fire prevention function and support local agency training and qualification efforts. Specifically, the following efforts are recommended:

- Develop training programs for engine company inspection personnel based on national standards
- Encourage NFA to develop a turn key model training program for fire departments
- Develop training programs for key public assembly personnel (facility employees, inspectors)
- Establish flexible hours for fire inspectors to meet the peak operating times of assembly occupancies

- Utilize special duty officers (police officers, school resource officers) in fire awareness and life safety issues
- Establish requirements to notify regulatory authority of temporary uses

Issue VIII - Multiple Use

Problem Statement

Many facilities not originally intended for public assembly uses are being occupied as such. Examples include: schools that become churches on Sundays and warehouses that become impromptu dance halls. Often the facilities so utilized are not compliant with fire and life safety codes for public assembly use.

Initiative

Though some secondary facility uses are known and compliant with fire and life safety codes, the participants identified that many others go unregulated and, as a result, are not reported. Insufficient enforcement personnel preclude most agencies from aggressively identifying and addressing unreported secondary uses. Increasing the number of enforcement personnel available within a jurisdiction will allow more unregulated secondary uses to be discovered and made compliant with appropriate codes.

Strategies

The participants felt that IAFC should take the lead in promoting the establishment of a minimum staffing standard for fire prevention functions, such as those that already exist for emergency response functions (NFPA 1710/1720). In addition, funding for the addition of fire prevention staff should be identified and made available to local fire agencies.

Measures outlined by the groups to address this problem include the following:

- Proper and timely notification of the fire department of alternative uses
- Develop national code requirements that provide guidance for minimum safety provisions for special programs and uses (e.g., sleep-over use)

Issue IX - Pre-event Notification

Problem Statement

The variety of activities held at large multi-purpose facilities, like stadiums and exposition facilities, can present unique challenges to maintaining appropriate levels of fire and life safety. Exit systems, for example, change with each variation of the floor arrangement for any given event. Local fire officials may not have the tools or time to work through event planning to ensure appropriate levels of fire and life safety are employed.

Initiative

The USFA should develop an event planning process that can be used by local agencies to assure pertinent safety issues are considered prior to any event.

Strategies

A planning document should be developed that provides detailed guidance to fire officials involved in event planning to include the following:

- Terrorism/security issues
- Fire protection system functionality verification (active and passive)
- Integrity of exit systems
- Certification/licensing requirements for event managers
- Fire department response

A model training program should be developed to be used to train fire officials and event facility staff on the development of an event safety plan.

To ensure that quality pre-event planning occurs, appropriate code language should be developed and adopted to require the creation of a pre-event fire and life safety plan in multi-use facilities.

Issue X - Staff Training

Problem Statement

The fire service has invested substantial resources to provide public education on a variety of important safety concerns. One area that forum participants felt had not been well addressed is safety in public assembly areas. Such areas present unique risks and challenges during emergencies due to their size, occupant load, and other associated factors.

Initiative

A comprehensive public safety education campaign and materials should be developed to educate the public on risks and appropriate emergency actions in public assembly facilities.

Strategies

A public safety education program specifically addressing the issue of safety in public places should be developed and distributed to local agencies. This campaign should include such topics as locating alternative exits, how to evacuate a public assembly building, and other issues important to ensuring safe use of large occupancy facilities.

The groups recommended the following actions:

- Publicize successes with the help of media groups
- Develop staff training programs for employees of public assemblies

Issue XI - Prevention and Education

Problem Statement

Fire departments across the country are accomplished in delivering fire prevention services. Much of this can be duplicated elsewhere with equal or better success. Unfortunately, there are limited forums through which successful programs can be shared with fire service leaders across the country.

Initiative

Develop a system to capture and share best practices in fire prevention. This system should identify and solicit unique and effective prevention programs and distribute this information as broadly as possible and in sufficient detail to allow repetition of the programs in other jurisdictions.

Strategies

Conduct national and international surveys to include the following:

- Frequency of inspections by type of occupancy
- Staffing levels of fire prevention functions
- Training and certification requirements for inspection personnel
- Penalties for non-compliance with fire and life safety regulations
- Solicit information on innovative programs and practices in the area of fire prevention and public safety education
- Create and disseminate recommended best practices for fire inspection agencies based upon survey outcomes.

Problem Statement

Fire chiefs do not adequately support fire prevention efforts at the local level. Resources are not allocated to fire prevention personnel or activities at the level commensurate with the benefits to be realized from these investments.

Initiative

Fire chiefs must support the fire prevention initiatives in their communities and within their organizations.

Strategies

IAFC should encourage fire organizations to develop quality fire prevention programs and submit grant applications for such programs under the FIRE Act grant program. Participants suggested that other funding opportunities such as the Staffing for Adequate Fire and Emergency Response Firefighters Act (SAFER Act) be structured to fund proportional resources to fire prevention initiatives as a priority. It was

recognized that it will take leadership, political activation, and other efforts to raise prevention standards to a level of importance in parity with operations concerns.

The IAFC, in partnership with the USFA, should develop performance measures and benchmarks at the national level to guide the fire service community and legislators in setting priorities and establishing funding strategies.

Issue XII - Terrorism & Arson

Problem Statement

In today's post 9-11 environment, there are special threats such as terrorism and/or arson that create unique safety challenges for schools and places of public assembly. A careful balance must be maintained between fire and life safety functions and the need for security to protect the public from terrorism and arson threats.

Initiative

Fire and building codes must be amended to recognize the unique challenges posed by arson and terrorism and create the necessary balance. Likewise, domestic preparedness initiatives must recognize the fire and life safety needs of the occupants.

Strategies

In partnership, stakeholders should accomplish the following:

- Develop protocols to address lock-down procedures in educational occupancies
- Work with homeland security officials to develop security protocols for religious institutions that maintain a balance with fire and life safety needs
- Work with the USFA and the National Fire Academy (NFA) to develop model training programs and procedures for religious institution security and fire and life safety

Issue XIII - Interior Finishes and Decorations

Problem Statement

Interior finishes and decorations contribute to fire spread and smoke development and were factors in each major fatal public assembly fire event reviewed by the participants.

Initiative

Develop more realistic standards to address materials used in interior finish components and decorations.

Strategies

In reviewing notable fatal fire incidents that have occurred over the last half-century, the forum participants concluded that interior finishes and decorations were a significant contributing factor in each of the fires and added to rapid fire spread. To address this issue, the group assessed that it is necessary to develop realistic standards that update industry flame-proofing requirements.

It was recommended that IAFC and the National Fire Protection Association (NFPA) partner with the National Institute of Standards and Technology (NIST) to develop modern and updated standards for interior finish and decorative materials in order to reduce their contribution to flame spread and smoke development. It was suggested that computer models and a comprehensive materials database be employed by the fire service in evaluating these materials and making recommendations to code development committees.

Issue XIV - Suppression Systems

Problem Statement

Public assembly occupancies often lack automatic fire sprinklers, which would serve to make them safer for occupants during a fire emergency event.

Initiative

Require automatic fire sprinklers in existing public assembly occupancies

Strategies

Forum participants strongly encouraged the development of code change proposals and subsequent submission to all model code organizations that incorporate alternatives when a full NFPA 13 system is impractical. The groups further encouraged the development of a life safety sprinkler standard for commercial applications and sought to mobilize the IAFC to lead this effort by attending code hearings on the issue and supporting changes necessary for implementation.

Issue XV - Occupancy Environment

Problem Statement

Fire alarms are not discernable above ambient noise in some public assembly occupancies such as a nightclub hosting entertainment.

Initiative

Connect house lights, egress lights, and performance audio sound systems to the fire alarm system in public assembly occupancies.

Strategies

Code changes that effectively require the activation of house lights and egress lights to react in conjunction with the deactivation of performance audio systems during an emergency should be accomplished. The forums suggested that code change proposals be developed and submitted to each of the model code organizations, and promote their adoption.

Issue XVI - Exiting/Egress

Problem Statement

Crowd crush and other events caused by high occupant density lead to impeded evacuation and trampling injuries and deaths.

Initiative

To assist evacuation efforts and ensure the adequacy of available exits for all occupants in a public facility, a thorough review of occupant load

factors ought to be conducted to determine the best factor given room size and arrangements.

Strategies

Further research and development of code change recommendations should be undertaken and submitted to the code committees for consideration. The groups agreed that current code standards set the maximum occupancy code limits higher than is prudent for some uses.

Problem Statement

Main entrance doors in public assembly occupancies are insufficient for emergency egress in the event of an emergency, particularly one involving panic or contributing to the well-documented "herd effect."

Initiative

To accommodate the recognized human behavioral tendency to use the exit that one came in through, main entrance doors should be increased in width to permit egress of two-thirds of the total occupant load and overall exit capacity improved. Occupants should have sufficient egress even in the event of a panic or crowd-crush impeded evacuation.

Strategies

Propose, support, and mobilize efforts to get these changes through the code committees for implementation.

Issue XVII – Code Initiatives

Problem Statement

Code requirements for public assembly occupancies are not sufficient to ensure safety in fire emergencies.

Initiative

Implement changes to the model fire and building codes to correct existing deficiencies. Deficiencies to be addressed include the following:

- "Lights up – sound off" when alarm sounds

- Emergency exits open when alarm system activates, such as used by the patented Disney exiting system, which is a system and method of providing passenger ingress and egress in an amusement ride having pivotal bridges
- Floor lighting and audible directional systems that direct occupants towards exits
- Air handling systems
- Rescue air systems (air standpipe)
- Wider stairs

Strategies

Amendments should be developed to model fire and building codes to address current inadequacies. The IAFC should encourage fire service leaders to actively promote adoption of these amendments.

Conclusions

A theme identified by the participants in response to the in-depth review of the Minneapolis and West Warwick fires and carried throughout the discussion was the need for the fire service community to begin documenting successes as well as failures. There is a great deal of information available to analyze the tragic, unsuccessful events, but very little to assist the fire prevention community in learning.

The groups considered the human factors that lead to instability and unpredictable outcomes during major emergency events. It was concluded that future life safety efforts involving public assembly occupancies should include more emphasis on predicting and managing human behavioral responses.

This conclusion was not limited to crowd response, but also to the activities of event staff and crowd managers. Interaction with venue managers was considered to be pivotal in achieving success. Fire prevention and code enforcement officers were encouraged to serve as liaisons from the fire service community and to disseminate education and best practice guides to occupancy

administrators.

It was suggested that with the growing number of multiple uses for public assembly occupancies, inspection professionals should visit the facility during an event to correctly evaluate and assess safety hazards and identify special concerns. It was asserted the fire professionals should be involved in assisting occupancies with their pre-planning efforts and participate in training exercises particularly with occupancies with identified risk factors.

The facilitation of relationships between the fire service industry and other stakeholders concerned with public occupancy issues was discussed. It was proposed that the fire service industry should work to allocate more resources toward education and prevention efforts and develop productive relationships with political figures.

The participants encouraged leadership from influential fire service organizations to shift primary industry focus from operational competencies to proactive enforcement and education efforts that can effectively reduce fire and life safety hazards and influence new modern concerns such as terrorism.

These leaders should also work to advance funding opportunities to promote these efforts. It was noted that fire administrators must be motivated to take advantage of such funding, as currently there is apathy toward such programs.

Technology was not underestimated as an asset to achieving safer occupancies. Engineering technology advancements to specifically accommodate life safety objectives was discussed. It was recommended that the fire service identify applications for existing technology and encourage the development of solutions and products to meet life safety needs.

There was no consensus on whether there should be a single model fire and building code set or whether competing code sets provide value. One group felt strongly that a single model code set was

in the fire service's best interest. The other group lacked that strength of opinion, stating that competition does provide value in that it fosters innovation.

Conference participants identified a number of efforts that should be engaged by the IAFC. In its leadership position the IAFC should do the following:

- Emphasize the importance and priority of fire prevention and its funding with the Department of Homeland Security (DHS) and other involved agencies
- Educate fire chiefs about resources available to support and improve fire prevention services
- Ensure fulfillment and follow-up of the initiatives and strategies discussed in this report
- Emphasize the importance of maintaining fire inspection and prevention services within the fire service rather than in other services such as the building department
- Provide resources to fire chiefs to help sell fire prevention to elected and appointed officials
- Provide support and assistance to local agencies to assist their grant application efforts
- Distribute updated safety announcements.

Next Steps

Future forums should include a much broader participant base and include those impacted by fire safety regulation along with those who enforce the codes. Political leaders were specifically mentioned as contributors to this next step.

The problems discussed were significant and the initiatives and strategies were well considered and practical. Numerous action items are contained in this report that, if implemented, will provide a marked improvement in fire safety in public assembly occupancies. The groups implore the IAFC to devote sufficient staff time and resources to ensure follow through on this report's recommendations.

Initiatives

Issue I - Festival Seating

Alternatives to festival seating arrangements should be developed and amended into existing fire and building codes to improve the level of safety for occupants when festival seating plans are used.

Issue II - Crowd Management

Venue operators should be assisted by local and/or state fire officials in developing effective crowd management plans. Assistance should also be provided in training venue staff on those plans and making sure they know how to implement them.

Issue III - Political Intervention

The United States Fire Administration (USFA) should take the lead in working with other key associations such as the International City/County Management Association, the National League of Cities, and others, to develop partnerships that will inform politicians on the need for effective fire prevention and mitigation.

Issue IV - Emergency Planning

A master plan to address the absence of such plans in these occupancies should be constructed. Such a master plan should be in the form of a "best practice" document that will be widely distributed to and adopted by state and local jurisdictions.

Issue V - Human Behavior Factors

The IAFC should partner with the U.S. Fire Administration (USFA), the Centers for Disease Control (CDC), and other organizations to further investigate individual and collective behavior in fire and other emergency situations. The groups noted that special conditions, such as noise, darkness, physical impairment due to alcohol and drugs, and volatile entertainment may affect human judgment and cognitive ability.

Issue VI - Pyrotechnics & Special Effects

Ensure that the use of pyrotechnic and open flame devices complies with nationally recognized standards and codes.

Issue VII - Enforcement & Oversight

Work to ensure that the fire prevention function is staffed as needed to provide quality fire prevention services. Develop and/or enhance training programs and certification systems to ensure that personnel conducting fire inspections are qualified in the performance of those duties.

Issue VIII - Multiple Use

Though some secondary facility uses are known and compliant with fire and life safety codes, the participants identified that many others go unregulated and, as a result, are not reported. Insufficient enforcement personnel preclude most agencies from aggressively identifying and addressing unreported secondary uses. Increasing the number of enforcement personnel available within a jurisdiction will allow more unregulated secondary uses to be discovered and made compliant with appropriate codes

Issue IX - Pre-event Notification

The USFA should develop an event planning process that can be used by local agencies to assure pertinent safety issues are considered prior to any event.

Issue X - Staff Training

A comprehensive public safety education campaign and materials should be developed to educate the public on risks and appropriate emergency actions in public assembly facilities.

Issue XI - Prevention and Education

Develop a system to capture and share best practices in fire prevention. This system should identify and solicit unique and effective prevention programs and distribute this information as broadly as possible and in sufficient detail to allow repetition of the programs in other jurisdictions.

Issue XII - Terrorism & Arson

Fire and building codes must be amended to recognize the unique challenges posed by arson and terrorism and create the necessary balance. Likewise, domestic preparedness initiatives must

recognize the fire and life safety needs of the occupants.

Issue XIII - Interior Finishes and Decorations

Develop more realistic standards to address materials used in interior finish components and decorations.

Issue XIV - Suppression Systems

Require automatic fire sprinklers in existing public assembly occupancies

Issue XV - Occupancy Environment

Connect house lights, egress lights, and performance audio sound systems to the fire alarm system in public assembly occupancies.

Issue XVI - Exiting/Egress

To assist evacuation efforts and ensure the adequacy of available exits for all occupants in a public facility, a thorough review of occupant load factors ought to be conducted to determine the best factor given room size and arrangements.

Issue XVII - Code Initiatives

Implement changes to the model fire and building codes to correct existing deficiencies. Deficiencies to be addressed include the following:

- “Lights up – sound off” when alarm sounds
- Emergency exits open when alarm system activates, such as used by the patented Disney exiting system, which is a system and method of providing passenger ingress and egress in an amusement ride having pivotal bridges
- Floor lighting and audible directional systems that direct occupants towards exits
- Air handling systems
- Rescue air systems (air standpipe)
- Wider stairs

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